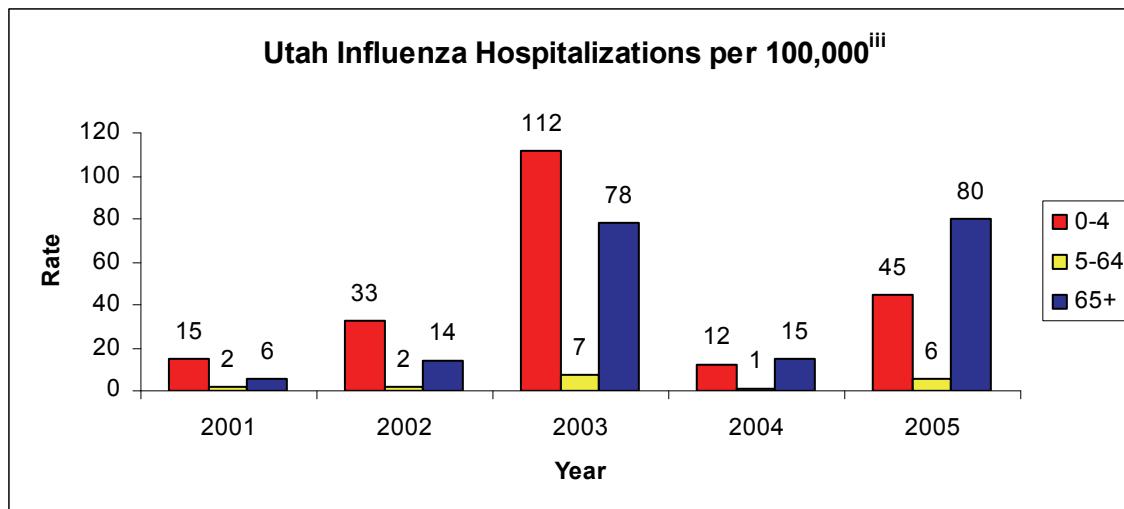
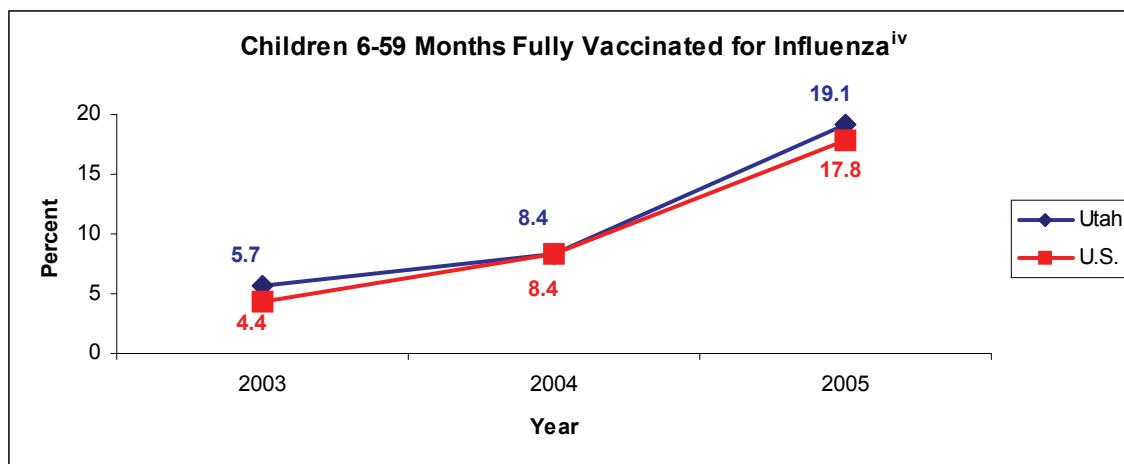


Additional Antigens - Influenza

Influenza (flu) is a very contagious viral infection of the nose, throat, bronchial tubes, and lungs. Influenza is a respiratory infection and generally does not involve gastrointestinal symptoms, except in very young children. It is estimated that 30 to 60 million U.S. residents get influenza each year. About 100,000 of them are hospitalized and an estimated 36,000 die each year from complications (primarily pneumonia) associated with the disease. Populations that are particularly susceptible to influenza include adults 65 years and older (more than 90% of all influenza deaths), children less than 24 months, people with cardiovascular disease, chronic respiratory disease, and people with chronic metabolic disease such as diabetes.ⁱ Each year in the U.S. there are between 19,000 and 96,000 hospitalizations among children 0-4 years.ⁱⁱ From 2001-2005 there was an average of 103 influenza-associated hospitalizations among Utah children 0-4 years.ⁱⁱⁱ During the same time period there was an average of 80 influenza hospitalizations among Utahns 65 years and older.

Flu vaccine is up to 90% effective in preventing illness for healthy populations younger than 65ⁱⁱ, but effectiveness is contingent upon the strains used in the vaccine being similar to what circulates during flu season. For populations older than 65 years the vaccine is 30-40% effective in preventing illness, 50-60% in preventing hospitalization, and 80% effective in preventing death. As indicated below, Utah is on par with national flu vaccine rates for children younger than five years, but there is still much room for improvement. Charts for flu vaccine among adults 50 years and older can be found on the *Child and Adult Immunization* pages in the main body of this report.



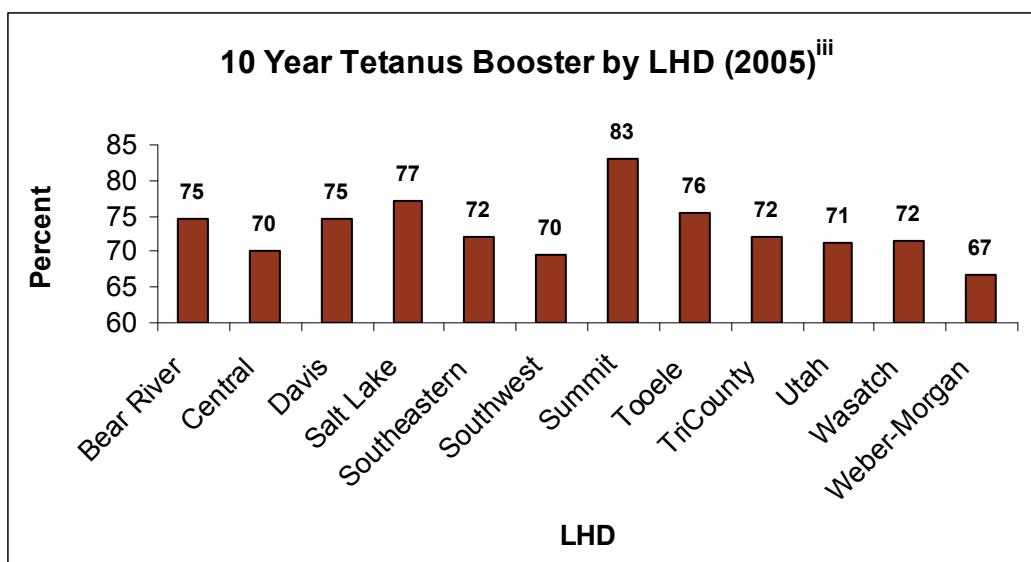
Additional Antigens - Tetanus

Tetanus is an acute and often fatal disease caused by an exotoxin produced by *Clostridium tetani*. It is the only vaccine preventable disease that is infectious but not contagious. The bacteria typically enters the body through a break in the skin, which may be caused by a major or minor wound (typically puncture, laceration, or abrasion). Death occurs in about 10-20% of all cases.ⁱ

After receiving a primary series of tetanus antitoxin nearly all recipients are immune. After ten years, most people have immunity that approaches the minimal protection level, and require a booster vaccine. If someone receives a wound that is other than clean or minor they may need to receive a booster dose prior to the ten-year mark.ⁱ

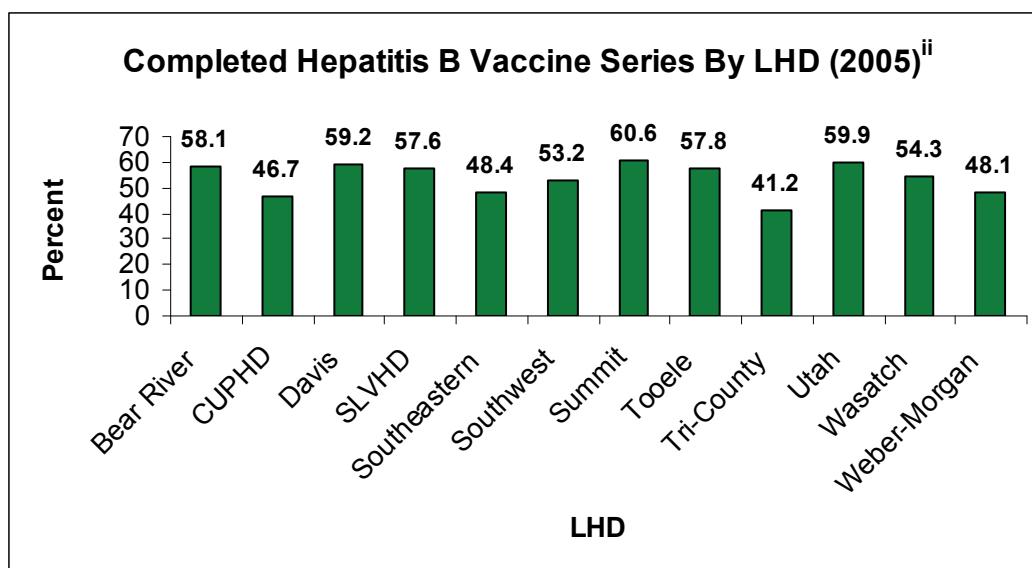
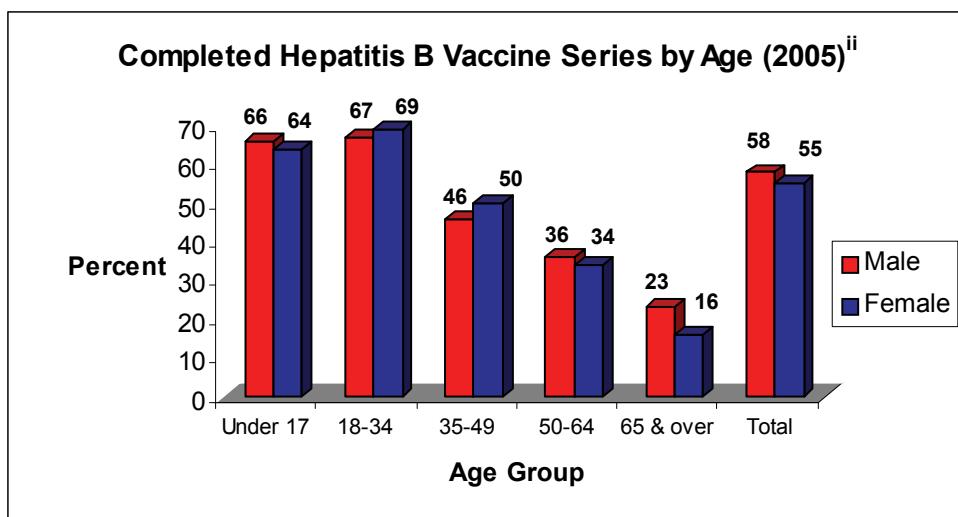
During the period of 1996-2000, there were 202 cases of tetanus nationally. Seventy-two were older than 60 years, 116 were 20-59 years and 14 were less than 20 years. Almost all cases of tetanus were among adults who either did not receive the primary vaccination series or who had not received a ten-year booster doseⁱⁱ. These statistics convey the importance of adults receiving adequate booster doses. The following data were collected from the 2005 Utah *Health Status Survey*. The majority of Utahns received a booster dose, but the percentage decreases as age increases. Ten-year tetanus booster percentages in Local Health Departments do not vary much from the state level of 74%.

Percentage of Utahns Who Have Had a Tetanus Shot in the Past 10 Years ⁱⁱⁱ						
Age	11 to 17	18-34	35-49	50-64	65 & Over	Total
Utah Total	83.0	78.3	69.2	69.4	56.2	73.8
Males	86.7	86.2	76.1	67.9	67.2	79.7
Females	79.4	71.0	62.0	70.7	49.3	68.6



Additional Antigens - Hepatitis B

Hepatitis B is second only to tobacco among known human carcinogens and is the cause of up to 80% of liver cancers. In the U.S. there are between 1 and 1.25 million persons infected with chronic Hepatitis B and 5,000 to 8,000 become chronically infected each year. Persons with chronic infections may be asymptomatic but can still infect others. Transmission occurs by parenteral or mucosal exposure to body fluids from someone with acute or chronic infection. In the U.S. the most important mode of transmission is through sexual contact. Adult candidates for vaccination include men who have sex with men, heterosexuals who have multiple partners, persons diagnosed with a sexually transmitted disease (STD), prostitutes, injection drug users, inmates of long-term correctional institutions, persons receiving hemodialysis, and health care workers. Ninety to 95% of teens and adults, and 98-100% of infants receiving a completed series (3 doses) will develop sufficient antibodies for protection against infection.ⁱ The percentage of Utah adults who have completed the vaccine series is slightly above 50%. The percentage drops as age increases, which is expected since the vaccine wasn't available until 1981. There is not much variation across local health districts.



Additional Antigens - Varicella (Chickenpox)

Varicella, or chickenpox, is a relatively mild infection in young children causing approximately 11,000 hospitalizations in the U.S. each year prior to the development of a vaccine in 1995. In Utah, 82% and 73% of children are up-to-date (UTD) at two years with varicella vaccine in public and private settings respectively. Outbreaks in settings, such as day care centers or schools, can still occur and last up to six months, causing a major disruption to community, family, and work life of families. After one dose of varicella vaccine, 97% of children 12 months to 12 years develop antibodies. It is now recommended that children 12 months and older receive two doses of varicella vaccine, at least three months apart. Varicella vaccine is also recommended for all adolescents and adults who do not have evidence of varicella immunity. After one dose of varicella vaccine, 78% of adults and adolescents have evidence of immunity, and after a second dose, 99% develop antibodies. In field conditions, varicella vaccine is 80-85% effective against infection and over 95% effective against severe disease.ⁱ

Varicella can also cause serious problems in adults who are infected. Herpes zoster, or shingles, is a latent infection that can cause debilitating symptoms (e.g. rash, blisters, extreme pain, fever, chills, headache, upset stomach). Anyone who has recovered from chickenpox can develop shingles, but it is more common among people over 50 years. An estimated 300,000 cases of zoster occur each year. On May 25, 2006, the Federal Drug Administration (FDA) approved a vaccine (Zostavax™) for use among people 60 years and older for the prevention of shingles. In a clinical trial involving thousands of participants, Zostavax™ prevented shingles in 51% of the participants and post-herpetic neuralgia in 67% of the participants. The Advisory Committee on Immunization Practices (ACIP) recommends a single dose of Herpes Zoster vaccine for adults 60 years and older. This recommendation will be reviewed by the Director of Centers for Disease Control and Prevention (CDC) and the Department of Health and Human Services.^{i, ii}

According to the 2005 Utah Health Status Survey, there are approximately 218,500 Utahns (8.6% of total population) that have never had chickenpox or the chickenpox vaccine. The majority of those unvaccinated are 17 years and younger. There are 186,600 Utah adults 65 and older who have had chickenpox and are at increased risk for shingles (no data available for Utah adults 60-64). The total 2006 Utah population 60 years and older, and therefore eligible to receive Zoster vaccine, was 301,214.

Varicella and Zoster Vaccine Need				
Local Health District	# People who have never had chicken pox or vaccine (2005) ⁱⁱⁱ	Percent of total population	2006 population 60+ yrs (eligible for Zoster vaccine)	
Bear River	13,905	9.3	16,511	
Central	7,346	10.3	10,744	
Davis	26,274	9.5	30,195	
Salt Lake	69,548	7.2	114,592	
Southeastern	6,132	11.6	8,647	
Southwest	13,495	7.4	34,766	
Summit	3,517	9.7	3,898	
Tooele	3,935	7.6	5,209	
TriCounty	4,027	9.5	6,063	
Utah County	44,077	9.7	38,325	
Wasatch	1,538	7.6	2,213	
Weber-Morgan	24,432	11.0	30,051	
Total, All Utahans	218,226	8.6	301,214	

Sources: ⁱ Epidemiology and Prevention of Vaccine-Preventable Diseases (CDC Pink Book),

ⁱⁱ <http://www.cdc.gov/vaccines/vpd-vac>, ⁱⁱⁱ 2005 Utah Health Status Survey